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MAJOR CROP PROGRESS AND WEATHER REPORTING

HIGHLIGHTS OF EARLY MAY CROP PROGRESS IN USSR

Moscow SEL'SKAYA ZHIZN' in Russian 30 Apr 81 p 1

[Article by N. Osychkin: "To Sow In An Efficient Manner!"]

[Text] Tomorrow is the glorious holiday of May Day. The country's farmers are greeting it by performing efficient work out on the fields. Taking advantage of each good hour out on the fields, they are directing all of their efforts towards the successful carrying out of the spring sowing campaign, obtaining high and stable yields at each kolkhoz and sovkhoz and fulfilling the decisions handed down during the 26th CPSU Congress with regard to further developing the agroindustrial complex.

According to data supplied by the USSR CSA, by 27 April spring crops had been sown on 26.1 million hectares at kolkhozes, sovkhozes and interfarm enterprises. This is somewhat more than was sown by this same time last year. During the past week, sowing operations were carried out on 5.6 million hectares.

Unstable weather is delaying the course of the sowing campaign. As a result, many types of work must be carried out in May and the volume of such work has increased considerably. The sowing period for one crop is literally merging with that for another crop. This is why a requirement exists at the present time, with the warm weather setting in, for undertaking energetic measures aimed at making up for lost time and for raising considerably the rates for preparing the soil and sowing the crops.

The field workers in Sal'skiy Rayon in Rostovskaya Oblast are working in an efficient manner and displaying a high degree of responsibility. In all, they required only 40 hours for sowing their early grain, pulse and grass crops. The kolkhozes and sovkhozes are presently engaged in sowing their late crops out on the fields. Seventy sowing complexes are in operation on the farms. Hourly sowing schedules have been developed and are being observed in a strict manner here and measures have been defined for issuing moral incentives to leading workers. For preparing the soil, the units are being operated around-the-clock and for sowing the crops -- in two shifts. The work being performed by all of the services -- agronomic, engineering and cultural domestic -- is subordinated to the main goal: ensuring that each unit produces a high output and performs its work in a high quality manner. Machine operators V.A. Zagorskiy, G.T. Pershin and A.N. Kotlyarov raised their daily cultivation output to 110-150 hectares.

The experience accumulated in Sal'skiy Rayon in organizing the spring field work has been approved by the RSFSR Ministry of Agriculture and the republic committee of the professional trade union for agricultural workers. It testifies to the tremendous opportunities which are at the disposal of the kolkhozes, sovkhozes, subunits of Sel'khoztekhnika and Sel'khozkhimiya and land reclamation organizations for successfully carrying out the urgent spring operations and for creating a reliable foundation for the harvest. The party organizations, agricultural organs and the kolkhoz and sovkhoz leaders must ensure that the competition is publicized on an extensive scale and that the experience of leading workers and sowing innovators is disseminated and introduced into operations.

Field work is presently being carried out in all of the union republics. In the Russian Federation, the spring crops have been planted on the first 6.6 million hectares. In Stavropol'skiy Kray the sowing plan has been fulfilled by 62 percent, in the Kabardino-Balkarskaya ASSR -- by 57, in Krasnodarskiy Kray -- by 54, in the Checheno-Ingushskaya ASSR -- by 52 percent. Work is unfolding in the central chernozem zone. The workers in Belgorodskaya Oblast have planted their spring crops on almost one half of the areas allocated. The farms in Voronezhskaya Oblast have just fulfilled their plan by 13 percent and those in Lipetskaya Oblast -- by 10 percent. The farmers in the central, Volga and Ural economic regions are commencing their sowing work. In the Far East, one third of the spring crop fields have been sown.

The kolkhozes and sovkhozes are sowing their sixth million hectares. Mechanized complexes have been moved out onto the fields in Belorussia, Lithuania, Latvia and Estonia. The principal grain concern -- the bread and fodder grains. The farms are undertaking all possible measures in the interest of obtaining high winter crop yields. A top dressing has been applied to 33.4 million hectares of plantings. This work is being carried out rapidly in Kuybyshevskaya and Saratovskaya Oblasts. The trains carrying fertilizers must be speeded up, the winter crops should be provided with additional nourishment and mineral fertilizer should be applied to the spring crop drill rows during sowing. Barley has been planted on 6.6 million hectares -- smoewhat more than by the end of April last year. The farms are increasing their growing areas for pulse and groat crops, oats and soybeans. Unfortunately, the seed for these crops is not distinguished by fine quality in all areas.

The most important period is at hand on the corn plantations. Corn must be grown on more than 2.9 million hectares using the industrial technology. As yet, it is being employed on only 310,000 hectares. In Moldavia, where all 350,000 hectares are of the "machine" type, the fields have been levelled off, topped off with fertilizers and cleansed of weeds through the use of herbicides. The crews of the units are not tolerating any pause between the pre-sowing tilling and the actual sowing work. Work is unfolding on the corn fields in the Kuban', the Crimea and in Odesskaya Oblast.

Importance is attached to observing in a very strict manner the sowing periods for other crops being cultivated using the industrial technology. Here we have in mind mainly sunflowers. They have been planted on 1.3 million hectares. Although the sowing machines are departing the plantations in Stavropol'skiy Kray, in the Don River region just slightly more than 14,000 of 400,000 hectares have been sown in sunflowers. This year, large areas are being made available for this crop in the Ukraine, in the TsChO [central black earth region] and the Volga region. And here the problems concerned with agricultural practices, technology and obtaining a high yield of the oil-bearing seed warrant priority attention on the part of the farm leaders and specialists.

Potatoes have been planted on 489,000 hectares and vegetables -- on 461,000 hectares. In order to satisfy completely the population's requirements for these food products, high yields must be obtained from each hectare. And the foundation is presently being established for accomplishing this. Many Belorussian farms are setting a fine example. In Vitebskaya Oblast, the potatoes are being planted in ridges. This is accelerating the warming of the soil and it is making it possible to commence the field work earlier.

The beet growers are hurrying with their work. They have already completed sowing work on 2.2 million hectares. The sowing work is coming to an end on many farms in the Ukraine. Although the sowing work has been completed in Krasnodarskiy and Stavropol'skiy Krays, as yet only one fifth of the areas in the Russian Federation has been sown. The farms in southern Kazakhstan and Kirgizia are commencing the tending of their plantings.

The farmers in the country's zone of irrigation have a large volume of work to carry out. The farms have already sown cotton on 2.9 million hectares. The sowing work has ended in Uzbekistan, Tadzhikistan and Azerbaijan. The brigades and teams are commencing their cultivation of inter-row spacings and preparing for the irrigation work. Rice has been sown on 67,000 hectares. The farmers in Kzyl-Ordinskaya Oblast, where this year the growing areas are being expanded noticeably, have moved more than 4,000 units out onto their check plots. One fourth of the rice fields in the Kuban' has been sown.

The kolkhozes and sovkhozes are sowing their vetch and vetch mixtures for grain, beans, annual and perennial grasses, fodder root crops and melon crops. Work is continuing in the orchards and vineyards. Many labor collectives have resolved to mark the first days of May by performing efficient work out on the fields and achieving high outputs for their units. "Each hour of spring -- in behalf of the harvest for the first year of the new five-year plan!" -- such is the slogan for the competition that is unfolding for the agricultural workers.

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CSO: 1824/255

LIVESTOCK FEED PROCUREMENT

FEED GRAIN QUALITY KEY TO INCREASED LIVESTOCK YIELD

Moscow PLANOVOYE KHOZYAYSTVO in Russian No 4, Apr 81 pp 96-103

[Article by N. Shcheblykin, department head at USSR Gosplan: "Raising the Efficiency of Use of Grain in Animal Husbandry"]

[Text] The development of animal husbandry and raising its efficiency are associated with converting it over to an industrial basis. During the July (1978) Plenum of the CC CPSU, L.I. Brezhnev stated that the operational experience of large swine raising enterprises reveals that the conversion over to industrial methods for producing pork is making it possible to raise the weight increases and shorten the fattening periods and to obtain output with minimal labor, feed and monetary expenditures.

The high rates of increase for egg production throughout the country are associated with the introduction of industrial methods in poultry raising operations. The creation of poultry factories and animal husbandry complexes, based upon industrial technologies for the production of eggs, meat, poultry, milk, beef and pork, required changes in the structure of the feeds being consumed in animal husbandry and it led to a considerable increase in the consumption of concentrated feeds and particularly grain (see Table 1).

The "Basic Directions For the Economic and Social Development of the USSR During the 1981-1985 Period and For the Period Up To 1990" call for an increase in the production of grain in our country and for the average annual yield of grain to be raised to 238-243 million tons during the Eleventh Five-Year Plan.

An increase in the production of grain is associated with developing and strengthening the feed base for animal husbandry. In delivering the Summary Report of the CC CPSU to the 26th party congress, L.I. Brezhnev noted that although the requirement for bread grain is being satisfied completely, emphasis should nevertheless be placed upon the cultivation of forage grain crops.

In connection with the great volumes of grain being expended for livestock and poultry feed, the effectiveness of use of this feed and the ability to obtain a maximum amount of animal husbandry products for each ton expended are becoming especially urgent problems. It is known that the livestock must be provided with well balanced feed if high technical-economic indicators are to be achieved in animal husbandry. In accordance with modern data obtained from biochemistry and the physiology of nutrition, the feed for young agricultural animals, swine and poultry must be balanced in terms of 50-60 nutritional and biologically active substances.

Table 1

Structure of Feeds Consumed in Animal Husbandry
(in millions of tons of feed units)

	1965	1970	1975	1979	1979 in % of 1965
Feed consumption at all categories of farms -- total	278.5	328.2	368.5	403.3	144.8
Including concentrated feeds	64.7	101.2	115.1	140.9	217.8
Proportion of concentrated feeds in overall consumption, %	23.2	30.8	31.2	35.0	-

The feed rations are prepared taking into account the breeding, age and productivity of the animals, the peculiarities of maintenance, the conditions of the surrounding environment and the physiological status of the livestock and poultry. In addition to the required calorific value and protein content, the feed must also include the required amount of irreplaceable amino acids in a definite ratio, group of vitamins, micro and macroelements, antibiotics, fermenting preparations, fatty acids, structural carbohydrates, taste agents, antioxidants and also, in certain instances, treatment-preventive (medicinal) preparations.

Only mixed feed developed under industrial conditions can contain such a complex of nutritional and stimulating substances. The use of such feed in animal husbandry will make it possible to obtain higher yields of products per unit of feed expended, with the quality being higher and with less expenditures (see Table 2).

In 1979, feed consumption for the production of 1,000 eggs at the poultry factories Krasnyye Zori, Nevskaya of the Leningrad Ptitseprom Trust, at the Minsk Production Association for Poultry Production, at the Vevis Poultry Factory and the Girele Poultry Factory in the Lithuanian SSR amounted to 172, 174, 169, 162 and 159 kilograms of feed units respectively, with the average consumption at kolkhozes and sovkhozes being 260 feed units.

In order to obtain 1,000 kilograms of live broiler weight at the Berezovka Broiler Association in Krasnoyarskiy Kray, 3,500 kilograms of feed units were expended on the average during the 1971-1978 period. In the meantime, the operational experience of the best foreign broiler farms reveals that such expenditures can be reduced to 2,000 kilograms.

In 1979, the Sovkhoz-Combine imeni 50-Letiya SSSR in Gor'kovskaya Oblast expended 4.3 tons of feed units in order to obtain 1 ton of weight increase during the raising and fattening of swine and each of 24 complexes for the raising and fattening of 108,000 swine annually expended an average of 4.7 tons of feed units in

Table 2

Effect of Full Value of Rations on Indicators During Fattening of Swine*

	Coefficient of use of feed, in %	Duration of fattening in days	Expenses per kg of weight increase, in kg of feed units	Production cost for weight increase compared to production cost for unbalanced rations, in %	Yield of products, in kg	
					Meat	Fat
Unbalanced ration (OR)	33.0	210	7.17	100.0	27.2	44.9
OR + protein-vitamin additive	40.5	132	5.12	66.5	34.8	38.9
Full value mixed feed, enriched with premixes	46.2	105	3.71	52.0	37.1	34.2

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* See: "Production and Rational Use of Feed Protein." Edited by Doctor of Agricultural Sciences I.P. Proskura, Kiev, Urozhay, 1979.

order to obtain 1 ton of weight increase. At the same time, the average feed consumption to obtain 1 ton of weight increase in swine raising amounted to 8.9 feed units this year. Here then are the reserves for solving the feed problem. Thus, during the July (1978) Plenum of the CC CPSU, emphasis was placed upon the need for ensuring that all grain being used to satisfy the requirements of animal husbandry be fed to the animals in processed and balanced form.

Compared to 1965, the production of mixed feed in 1981 will increase throughout the country by a factor of 4.5 and its proportion in the overall consumption of concentrated feed will increase from 23.8 to 46 percent. The consumption of concentrated feeds and the production of mixed feeds, taking into account the production operations at kolkhozes and sovkhozes and based upon protein-vitamin additives, in accordance with the 1981 plan, are shown in Table 3.

However, from 26 to 66 percent of the concentrated feeds are still being used in the republics without the required balancing and hence they are less effective.

One of the most important and complicated tasks is that of ensuring that animal husbandry is supplied with the required amount of protein. For the efficient conduct of animal husbandry operations, importance is attached to maintaining the correct ratio of energy and protein in the rations. Moreover, the protein level in the feeds must ensure synthesis of the protein in the growing tissues of the animals and poultry, at the level of the genetic potential for the particular strain.

The efficiency of animal husbandry operations decreases when there is a disruption in the energy and protein ratio. Thus, if there is a deficit of energy in the ration, the protein is used as a source of energy (economically least profitable) and if there is a deficit of protein then a reduction takes place in the synthesis of muscular tissue in the organism of the animal and hence in its growth.

Table 3

Feed Consumption and Production

	Consumption of concentrated feeds in thousands of tons (plan)	Production of mixed feeds, in thousands of tons (plan)	Proportion of mixed feed in overall consumption of concentrated feeds, in %
USSR -- total	151,749	69,927	46.1
Including:			
RSFSR	81,300	34,283	42.2
Ukrainian SSR	34,860	16,930	48.6
Belorussian SSR	7,375	3,632	49.2
Uzbek SSR	3,066	1,480	48.3
Kazakh SSR	8,245	3,353	40.7
Georgian SSR	1,277	910	71.3
Azerbaijan SSR	1,208	659	54.6
Lithuanian SSR	3,659	2,200	60.1
Moldavian SSR	3,049	1,993	65.4
Latvian SSR	2,292	1,530	66.8
Kirgiz SSR	1,679	763	45.4
Tadzhik SSR	687	343	49.9
Armenian SSR	844	626	74.2
Turkmen SSR	673	230	34.2
Estonian SSR	1,535	995	64.8

A surplus of energy in the rations leads to an increase in the synthesis of fat, which requires an expenditure of almost two times more energy than for the synthesis of protein; this also leads to a reduction in the daily weight increases.

For the rational use of available feed protein resources in poultry production extensive use is being made of phase feeding with varying protein content. The protein level is also changing at animal husbandry complexes depending upon the age of the animal and the intensity of the raising and fattening operations.

The task of raising the protein in the feeds to the required level is being carried out by including in the feeds high protein additives of plant and animal origin and also products of microbiological synthesis and for ruminant animals -- non-protein sources of nitrogen (peas, soybeans, lupine, vetch, rape, alfalfa, clover, fish and meat and bone meal, microbiological feed protein, cake and oil-seed meal, carbamide, diammonium phosphate and others).

Estimates reveal that in order to produce mixed feed in 1981 having the required protein level, it is necessary to increase, compared to 1979, the protein additive resources of plant origin by 1.8 million tons and those of animal origin and microbiological synthesis -- by 1.6 million tons.

In connection with the high rates of growth in the production of mixed feeds and the insufficient increase in the production of pulse crops, cake and oil-seed meal, protein additives of animal origin and also protein of feed microbiological synthesis, the average protein content in mixed feeds has decreased somewhat during the past few years, especially plant protein (see Table 4).

Table 4

Average Content of Digestible Protein in Mixed Feeds
(kilograms per ton)

	1965	1970	1975	1979
Average content of digestible protein in mixed feeds	141.3	129.5	125.6	120.9
Of which amount, by protein type:				
plant origin	131.4	115.4	110.5	107.6
animal origin	8.1	10.4	9.9	5.9
feed microbiological	1.8	3.7	4.9	4.8
non-protein sources of nitrogen	0.04	0.02	0.3	2.6

In animal husbandry, owing to the slow development of rations containing non-protein forms of nitrogen, the opportunities for using carbamide concentrates in the mixed feeds for ruminant animals are not being realized fully. Data on its use during 1979 is furnished in Table 5.

In order to achieve the required protein level in the concentrated feeds and the processing and balancing of all of the grain to be used for satisfying the needs of animal husbandry, it will be necessary, according to our computations, to increase the use of protein additives to 19.5 million tons (that is, an increase by a factor of more than 2.5), of which amount, plant protein -- up to 11.5 million tons and feed protein of microbiological synthesis and also fish and meat and bone meal -- up to 8 million tons. Thus, during the July (1978) Plenum of the CC CPSU, emphasis was placed upon the need for devoting special attention to solving the feed protein problem, mainly by increasing the production of pulse crops, soybeans, alfalfa, clover, rape and other high protein crops. And also to develop the production of nutrient yeasts, fish and meat and bone meal, whole milk substitutes, mineral and other industrial feed additives.

Glavmikrobioprom, USSR Minmyasomolprom [Ministry of the Meat and Dairy Industry], USSR Minpishcheprom [Ministry of the Food Industry] and USSR Minlesbumprom [Ministry of the Lumber and Paper Industries], all of which bear responsibility for ensuring that animal husbandry is supplied with industrially produced protein additives, must intensify their work aimed at increasing the production of feed additives and the USSR Minsel'khoz [Ministry of Agriculture] must ensure that the resources for plant protein feeds are raised to the required volumes and it must accelerate the mastering of the use of carbamide concentrates for ruminant animals.

The intensive conducting of animal husbandry operations requires the maintenance in the rations not only of a definite protein level but also its biological full value, determined by an optimum ratio of irreplaceable amino acids.

Table 5

Production and Use of Carbamide Concentrate

	Production of carbamide concentrate, in thousands of tons		Consumption per ruminant head of livestock, in kilograms annually
	Total	Including the USSR Ministry of Procurements	
USSR -- total	498.9	308.4	6.2
Including:			
RSFSR	120.8	58.0	2.9
Ukrainian SSR	172.0	77.6	10.4
Belorussian SSR	49.3	40.0	11.9
Uzbek SSR	-	-	-
Kazakh SSR	54.1	35.8	7.0
Georgian SSR	4.4	4.4	7.2
Azerbaijan SSR	22.2	22.2	23.9
Lithuanian SSR	15.3	15.3	12.9
Moldavian SSR	25.7	20.4	34.5
Latvian SSR	12.0	12.0	14.1
Kirgiz SSR	10.4	10.0	7.3
Tadzhik SSR	8.5	8.5	14.6
Armenian SSR	3.3	3.3	6.3
Turkmen SSR	0.2	0.2	0.4
Estonian SSR	0.7	0.7	1.3

A deviation in the content in the ration of any irreplaceable amino acid creates an imbalance and affects in an unfavorable manner the physiological condition of the animals and poultry and their productivity.

Studies carried out in our country and abroad have shown that, in the majority of instances, the natural feeds being used most extensively lack a number of irreplaceable amino acids required for highly productive animals and poultry. Thus, all grain feeds (cereal and pulse) and also cake and oil-seed meal are characterized by a considerable deficit of lysine or methionine and some -- both of the mentioned amino acids. A number of studies have appeared in recent years confirming the deficit of threonine in plant feeds.

Balancing additives which raise the content of the irreplaceable amino acids to the optimum level and ratio make it possible to raise considerably the degree of assimilation of the proteins contained in these feeds.

The results obtained from using amino acids to balance the proteins contained in various plant products are furnished in Table 6 (according to data provided by V.M. Belikov, V.G. Debabov and N.Ya. Tyuryaev)*. The nutritional value is expressed by the KEB [koeffitsient effektivnosti belka; coefficient of protein effectiveness], that is, by the increase in weight in an experimental animal caused by 1 gram of protein fed to it.

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*. V.M. Belikov, V.G. Debabov, N.Ya. Tyuryaev. "Amino Acids For Agriculture, the Food Industry and Public Health." VESTNIK AN SSSR, 1980, No 4, pp 18-25.

By way of a standard for comparison, use is made of the principal protein of milk -- casein -- the KEB of which equals 2.5 (see Table 6).

Table 6

Results of Balancing Plant Proteins Using L Amino Acids

Product	Original KEB	Balancing additive	KEB achieved	KEB achieved compared to original KEB, in %
Wheat	1.0	0.4% lysine + 0.15% threonine	2.5	250
Corn	1.4	0.3% lysine + 0.7% tryptophan	2.4	171
Oats	1.7	0.2% lysine + 0.1% threonine	2.5	147
Sunflowers	1.3	0.4% lysine + 0.3% threonine	2.2	169
Cotton	1.7	0.1% lysine + 0.3% threonine	2.6	153
Soybeans	1.9	0.23% methionine* +0.23% lysine	2.8	147

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* DL -methionine

During experiments carried out by E.G. Fillipovich (All-Union Institute of Animal Husbandry), the addition of 0.2 and 0.28 percent lisine to a wheat mono-grain ration made it possible to increase the average daily weight increases in swine from 339 to 589 (174%) and 648 grams (191%) respectively, to lower feed expenditures per kilogram of weight increase from 5.23 to 4.27 (81 percent) and 4.05 (77 percent) feed units and to reduce protein expenditures per kilogram of weight increase from 735 to 601 and 570 grams.

In studies carried out by V.G. Ryadchikov, the balancing of a ration with lysine, during the fattening of swine, made it possible to increase the average daily weight increases by 22.6 percent.

Numerous experiments concerned with the balancing of amino acids using lysine and methionine additives have been carried oot in poultry raising and with high economic indicators.

A summary of the results of studies carried out both in our country and abroad underscores the high economic effectiveness of adding irreplaceable amino acids to mixed feeds, the application of which in the amount of 2-4 kilograms per ton of mixed feed makes it possible to raise the output of animal husbandry products by no less than 20 percent.

The average amino acid structure for balanced mixed feeds, in conformity with the approved prescription and requirements of the USSR Ministry of Agriculture and actually produced in 1979 is presented in Table 7.

Table 7

Average Amino Acid Structure for Balanced Feeds

	Balanced Mixed Feeds		Mixed Feed Produced in 1979	
	Average content of crude protein in amino acids, kg per ton	Amino acids in % of crude protein	Average content of crude protein in amino acids, kg per ton	Amino acids in % of crude protein
Crude protein	173.9	-	147.2	-
Lysine	8.3	4.7	5.7	3.9
Methionine	3.1	1.8	2.8	1.9
Cystine	2.3	1.3	1.9	1.3
Tryptophan	2.0	1.1	1.8	1.2
Arginine	9.4	5.4	7.6	5.2
Histidine	4.4	2.5	3.5	2.4
Leucine-isoleucine	17.8	10.3	15.8	10.8
Phenylalanine	7.2	4.1	6.2	4.2
Threonine	6.1	3.5	5.0	3.4
Valine	8.0	4.6	6.8	4.6
Glycine	6.8	3.9	6.0	4.1
Alanine	8.9	5.1	7.4	5.0
Serine	7.0	4.0	5.8	3.9
Asparaginic acid	12.7	7.3	9.3	6.3
Glutaminic acid	27.0	15.5	25.2	17.1
Tyrosine	4.7	2.7	4.0	2.7

Computations carried out reveal considerable deviations in the average content of amino acids and in their ratios, including the irreplaceable amino acids in the mixed feeds produced in 1979 and established for future use by the USSR Ministry of Agriculture (taking into account their balancing).

At the present time, the lysine requirements of animal husbandry are being satisfied by Glavmikrobioprom by only 15 percent and its methionine requirements by Minkhimprom [Ministry of the Chemical Industry] -- by only 15 percent. In order to raise the effectiveness of use of the protein in concentrated feeds, the Eleventh Five-Year Plan calls for Glavmikrobioprom to be provided with the capability for satisfying the national economic requirements for amino acids obtained by means of microbiological synthesis (lysine, triptophan, threonine and others) and for Minkhimprom to provide the amino acids obtained from chemical synthesis.

The grain crops are an important source for protein and energy in mixed feeds. They contain 9-14 percent protein, 80-84 precent crude carbohydrates, of which 45-74 percent are reserve carbohydrates (mono and disaccharides, dextrin, starch) and 10-28 percent carbohydrates of plant walls (cellulose, hemicellulose and lignin).

The ratio between the reserve and plant wall carbohydrates differs substantially in the various feeds. In grain corn there are 7.5 units of reserve carbohydrates per unit of plant wall substance and in wheat, barley and oats -- 5.7, 3.7 and 1.6 respectively. The coefficient for the assimilation of pure reserve carbohydrates reaches 99 percent, however it decreases considerably in feeds where all of the components of the carbohydrate complex exert an influence. The coefficient of carbohydrate assimilation is especially dependent upon the ratio of the reserve carbohydrates to the plant wall ones and also upon the quality of the grain. The coefficient for the assimilation of plant wall carbohydrates is considerably lower. For example, they are used by poultry to only 10-20 percent. This is taken into account when preparing the prescription for the mixed feeds.

The greatest effect is achieved when complex fermentation preparations are introduced. The latter contain amylolytic, proteolytic and celluloseolytic ferments, which accelerate the use by the animals of starch and the protein components in the feed and which break up the cellulose and hemicelluloses into sugars.

Experiments carried out in the raising of young pigs at the Konstantinovo Breeding Farm and the Kryukovskiy Sovkhoz in Moscow Oblast have shown that the addition of fermentation preparations to the feed make it possible to obtain an additional increase in weight of 2-3 kilograms for each gram of fermentation preparation expended. The increase in animal weight was raised by an average of 10-12 percent. During experiments carried out with calves at the sovkhozes XII Parts"yezda in Kalininskaya Oblast and Kryukovskiy, the increases in weight realized from the introduction of fermentation preparations into the feed rose by 10-15 percent. After fermentation preparations were added to the ration for chicks at the Kuntsevskiy Poultry Factory, the increases in weight rose by 15-20 percent.

Glavmikrobioprom has created the capabilities and organized the production of a number of fermentation preparations, in volumes which will meet the requirements of animal husbandry.

In order to raise the effectiveness of use of grain, the experience accumulated both here and abroad should be disseminated more extensively and the assortment of fermentation preparations available for animal husbandry should be expanded.

Importance is attached to unsaturated fatty acids for raising the effectiveness of feeds; moreover, lineoleate, linolenic and arachidonic acids cannot be formed in an animal organism. They are irreplaceable and must be furnished with the feed. For example, the content of linoleic acid in the rations of laying hens must be approximately 2 percent and its content in wheat -- 0.83, barley -- 0.94-1.42, corn -- 1.8-2.14 and oats -- 1.22 percent. Unsaturated fatty acids are introduced into the feeds in the form of additives of fats and phoshatides rich in these acids. The fats make it possible to raise the energy density of the feeds and this is of great importance for reducing the consumption of rations; the fats also stimulate the assimilation of the energy of other feed components. According to estimates by specialists, the minimal fat requirements for poultry raising and animal husbandry have been established in the amount of 200,000 tons. Their use in the mixed feed industry in 1981 will amount to 15,000 tons.

The mineral structure of feeds is dependent to a considerable degree upon the type of soil, the types of fertilizers applied to the soil, the manner in which the land is used, the amount of precipitation and the genetic peculiarities of the plants. The mineral elements are required for normal growth and development in the animals, since they participate in many biochemical transformations and in all of the physiological processes of the organism. A shortage or surplus of certain elements lowers the productivity and fruitfulness, brings about a deterioration in the use of the feeds and causes sickness to occur. In addition, maximum productivity is possible merely by obtaining a maximum amount of mineral substances from the feeds and in definite ratios.

The grain rations are lacking a number of macro-elements (chloride, phosphorus, calcium, sodium and so forth). Thus, during the production of mixed feeds, feed phosphates, common salt, chalk and limestone and shell rock meal are added to their structures. The resources of these macro-additives are adequate and make it possible to enrich all of the concentrated feeds in use. The grain rations are also lacking a number of micro-elements (iron, copper, manganese, zinc, iodine and in some instances selenium, molybdenum and others). The balancing of mixed feeds in terms of these elements is carried out by adding salts to them. At the present time, the Ministry of the Chemical Industry is not satisfying fully the requirements of animal husbandry for micro-elements: zinc carbonate -- 38 percent, manganese -- 44, potassium -- 75, iron sulphate -- 66 and copper -- 75 percent.

Vitamins play a large role in the efficient use of grain in animal husbandry -- low-molecular biologically active compounds, required for maintaining the vitality of an organism and its normal growth. They participate in the metabolism mainly in the structure of the fermentation systems and almost all of them are furnished in feeds, since only a few of them can be synthesized in an animal organism. Moreover, great importance is attached to the balanced introduction of vitamins into animal feeds, so as to ensure raised productivity and resistance against infections and so forth. An optimum inclusion of vitamins in feed is especially important when industrial methods are employed in carrying out animal husbandry operations.

The responsibility for supplying animal husbandry with vitamins has been entrusted to Minmedprom [Ministry of the Medical Industry], Glavmikrobioprom and Minkhimprom [Ministry of the Chemical Industry], which are not coping with this task fully at the present time (see Table 8).

The introduction of antibiotics into the rations (they are presently being employed in practically all countries throughout the world) is producing fine results in lowering the consumption of feed for obtaining animal husbandry products. It is even making it possible to raise animal productivity considerably on those farms where there is a low level of animal husbandry management.

The feasibility of employing antibiotics for achieving high productivity, even where animal husbandry operations have been converted over to an industrial [illegible]is, has also been proven. Here the best results are being observed in poultry p[illegible]ction and swine raising.

Numerous experiments carried out by various institutes and animal husbandry farms have shown that when correct use is made of both antibiotics and feed, additional weight increases are obtained as follows: calves and lambs -- 8-12 percent, young swine -- 13-17, poultry -- 15-20 percent. The introduction of feed antibiotics into the ration for laying hens increases their egg laying capability by 9-10 percent and the hatchability of chicks by 7-8, the egg laying capability of ducks by 16-18 and the hatchability of ducklings -- by 7-8 percent.

Table 8

Satisfying the Vitamin Requirements of Animal Husbandry

Vitamins	Satisfaction of Requirements, %	Ministry of department responsible for satisfying requirements
A	62	Minmedprom
D_3	20	"
D_2	100	Glavmikrobioprom
E	10	Minmedprom
B_1	60	"
B_2	49	Glavmikrobioprom
B_3	58	Minmedprom
B_4 (cholinechloride)	14	Minkhimprom
B_5 (nicotinic acid)	37	Minmedprom
B_6 (pyridoxine)	-	"
B_c (folic acid)	25	Minmedprom
B_{12}	100	Glavmikrobioprom
C	29	Minmedprom
K_3	6	Minmedprom

Glavmikrobioprom organized the production of feed antibiotics not used in medical practice - feed grisein and bacitracin -- and it developed a technology for producing kormarin and vitamitein. A considerable expansion took place in the production of biovits. However, the animal husbandry requirements are still being satisfied by only 64 percent.

During the Eleventh Five-Year Plan, Glavmikrobioprom must expand considerably its assortment of antibiotics being produced and it must implement measures aimed at intensifying their production and creating additional capabilities for completely satisfying the requirements of animal husbandry.

During the production of full-value balanced feeds, use is made of anti-oxidants (santoxin, diludin, butyloxyanisol, ionol) for reducing the disintegration of vitamins A, D, E, carotene, unsaturated fatty acids and amino acids during the storage process. However, the requirements of the mixed feed industry for anti-oxidants by being satisfied by only 10 percent by Minkhimprom.

Glavmikrobioprom and USSR Minzag, which are responsible for providing animal husbandry with premixes, are presently satisfying the requirements by only 42 percent.

In the "Basic Directions for the Economic and Social Development of the USSR During the 1981-1985 Period and for the Period Up To 1990," emphasis is placed upon the task of converting the national economy over to the intensive path of development, to achieving more rational utilization of the country's productive potential, to realizing maximum economies in the use of all types of resources, to accelerating scientific-technical progress, to improving the quality of the goods being produced and to reducing losses.

In order to solve this task in animal husbandry, those branches engaged in producing protein additives, amino acids, premixes, vitamins and so forth, must be developed at an accelerated tempo. This will make it possible to supply grain for animal husbandry in a processed and balanced form, it will raise considerably the effectiveness of its use and it will increase the production of animal husbandry products with minimal expenditures.

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INDUSTRIALIZATION OF ANIMAL HUSBANDRY SECTOR EXAMINED

Moscow EKONOMIKA SEL'SKOGO KHOZYAYSTVA in Russian No 4, Apr 81 pp 36-39

/Article by Vasiliy Fedorovich Klyukov, doctor of economic sciences, head of the Council for the Study of Productive Forces under the USSR State Planning Committee, and Vasiliy Ivanovich Krivonogov, candidate of agricultural sciences, senior scientific worker at the Council for the Study of Productive Forces under the USSR State Planning Committee: "Problems of Industrialization of Animal Husbandry"/

/Text/ The transfer of animal husbandry to an industrial basis is the main trend in the sector's further development contributing to a fuller and more efficient utilization of labor resources, fodder, capital investments and the productive potential of animals.

In the light of the decree of the CPSU Central Committee "On the Further Development of Specialization and Concentration of Agricultural Production on the Basis of Interfarm Cooperation and Agroindustrial Integration," as well as the decisions of the July (1978) Plenum of the CPSU Central Committee, a significant construction of large animal husbandry enterprises with industrial production technology was carried out in the country in a short period.

More than 3,200 state, kolkhoz and interfarm complexes for the fattening of large-horned cattle and the breeding of heifers and dairy and hog and sheep breeding complexes now operate in the country. The rates of commissioning of animal husbandry enterprises with industrial production technology are increasing constantly. The share of production of the products of hog, livestock and sheep breeding at the complexes is increasing.

In 1979 the public sector obtained 25.8 percent of pork on the basis of industrial technology. The data in table 1 show that at hog breeding and fattening livestock complexes the average daily increases in the live mass of animals are 74 and 57 percent higher, labor productivity is 3.7- and 4.2-fold higher and fodder expenditure is 32 and 27 percent lower respectively. The production cost per unit of output at these enterprises was lowered 31 and 34 percent as compared with its production on kolkhozes and sovkhozes. The level of profitability rose.

At dairy complexes the productivity of cows is 15 percent higher, labor productivity is 36 percent higher and fodder expenditures per unit of output are 12 percent lower than at ordinary departments of farms. At the same time, at kolkhoz complexes, as compared with kolkhoz departments, the productivity of cows was 388 kg higher. The reduction in the production cost of animal products produced on an industrial basis, as compared with production at kolkhoz and sovkhoz departments, made it possible to save about 0.8 billion rubles in 1979.

Table 1.* Efficiency of Production of Animal Products at the Country's Complexes in 1979

	Complexes	Sovkhozes, Kolkhozes	Indicators of Complexes in % of Indicators of Sovkhozes and Kolkhozes
Pork Production			
Average daily increase in the live mass of bred and fattened hogs, g	354	203	174
Per quintal of increase in live mass:			
labor expenditures, man-hours	8.23	30.70	27
fodder expenditures, quintals of fodder units	6.3	9.3	68
including concentrates	5.9	7.8	76
Production cost per quintal of increase in live mass, rubles	123.53	178.11	69
Beef Production			
Average daily increase in live mass of bred and fattened large-horned cattle, g	586	374	157
Average live mass per head of livestock sold to the state, kg	378	347	109
Per quintal of increase in live mass:			
labor expenditures, man-hours	11.56	48.23	24
fodder expenditure, quintals of fodder units	9.5	13.1	73
including concentrates	4.4	3.3	133
Production cost per quintal of increase in live mass, rubles	137.32	209.25	66
Milk Production			
Milk yield per fodder cow, kg	2659	2309	115
Per quintal of milk:			
labor expenditures, man-hours	5.58	8.69	64
fodder expenditure, quintals of fodder units	1.4	1.6	88
including concentrates	0.5	0.5	100
Production cost per quintal of milk, rubles	27.05	27.79	97

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*"Pokazateli Raboty Zhivotnovodcheskikh Kompleksov SSSR po Soyuznym Respublikam za 1979 g." /Indicators of Work of USSR Animal Husbandry Complexes Throughout the Union Republics in 1979/, USSR Central Statistical Administration, Moscow, 1980.

"Osnovnyye Pokazateli Raboty Kolkhozov i Sovkhozov za 1979 g." /Basic Indicators of Work of Kolkhozes and Sovkhozes in 1979/, USSR Central Statistical Administration, Moscow, 1980.

Some of the country's animal husbandry enterprises attained even higher economic indicators owing to an improvement in labor organization and strengthening of the fodder base. For example, whereas, on the average, at the country's 2,120 dairy complexes in 1979 the yield per cow did not exceed 2,659 kg, at the Lensovetovskiy Complex in Leningradskaya Oblast with a capacity of 1,200 cows it was 4,101 kg. A total of 98 calves per 100 cows and heifers were obtained. Fodder expenditure per quintal of milk was 1.2 quintals of fodder units and direct labor expenditures totaled 1.8 man-hours, while the production cost of milk was 22 rubles 35 kopecks. The dairy complexes Leninskiy for 1,200 cows in Omskaya Oblast, imeni 50-Letiya SSSR for 1,200 cows in the Kirgiz SSR, Tartu for 1,000 cows in the Estonian SSR, Urozhaynyy for 1,000 cows in Krymskaya Oblast and others have significant achievements. The productivity of cows at these complexes was 3,253 to 4,370 kg, while the production cost of 1 quintal of milk was 18.27 to 21.75 rubles.

At the hog breeding complexes Il'inogorskiy in Gor'kovskaya Oblast, Kuznetsovskiy in Moskovskaya Oblast, Industrial'nyy in Krasnodarskiy Kray and Luzinskiy in Omskaya Oblast direct labor expenditures per quintal of pork were 2.3 to 2.5 man-hours, fodder expenditures were 4.3 to 4.8 quintals of fodder units and the production cost of an increase in live mass was at the level of 80.67 to 87.96 rubles.

The beef production complexes Valuyskiy in Belgorodskaya Oblast, [illegible]atovskiy in the Bashkir ASSR, Mir in the Belorussian SSR and Voronovo in Mos[illegible]skaya Oblast have average daily increases of 960 to 1,090 g in the live mas[illegible] large-horned cattle, spending 5.4 to 5.8 quintals of fodder units per qu[illegible] The production cost of 1 quintal of output is 99.35 to 109 rubles.

When transferring animal husbandry to an industrial [illegible], it is necessary to solve serious economic, along with technical and technological, problems, because large enterprises with the most refined equipment should ensure the production of the maximum quantity of high-quality output with minimal expenditures of labor and financial resources.

An organization of high-grade feeding of animals is of decisive importance in a reduction in production costs on any farm producing animal products. The expenditures on fodder in the structure of production costs reach 50-60 and even 80 percent. Therefore, the establishment of the necessary fodder base becomes a serious economic problem. If this problem is not solved in advance, the production effect of the transfer of animal husbandry to an industrial basis can be reduced in connection with the great losses of funds and unproductive expenditures. A solution of this problem is also necessary, because in different zones of our country there are specific characteristics of organization of the fodder base of livestock breeding and feeding of animals.

On the basis of the practical experience of animal husbandry enterprises in the United States, England and other highly developed capitalist countries some economists express the opinion that the separation of the production of animal products from farming--the basis for fodder production--is one of the signs of industrial technology. In our opinion, whereas such a separation is permissible in poultry and hog breeding and in fattening livestock breeding (not fully and not always), it is not advisable in our country's dairy farming. True, in our country, as well as in some socialist countries, attempts are made to separate this sector from farming through the establishment of specialized fodder producing farms. However, sufficient experience in such a trend in the development of dairy farming has not yet been accumulated. The specific characteristics of this sector require a regular delivery throughout the year of a large amount (60 to 70 percent of the need) of not easily transportable coarse and succulent fodder, whose transportation is not advisable economically. Therefore, the fodder base of such enterprises should be substantiated carefully.

However, the provision of some existing dairy complexes with fodder often is no more than 70 to 80 percent, which attests to the insufficient preparation of the material base for the mastering of new technology. Thus, the solution of the problem of fodder sources should precede the solution of all other problems in the transfer of livestock breeding to an industrial basis.

For a successful organization and strengthening of the fodder base of great importance is the utilization of irrigated land for fodder production. Extensive work on the establishment of a fodder base on irrigated land and on the utilization of the drainage of animal husbandry is done at Kuznetsovskiy (Moskovskaya Oblast) and Gubkinskiy (Belgorodskaya Oblast) complexes for pork production, each of which has a capacity of 108,000 head, and at Voronovo (Moskovskaya Oblast), Petrovskiy (Kiyevskaya Oblast) and Kagul'skiy (Moldavian SSR) complexes for the breeding and fattening of large-horned cattle, each of which has a capacity of 10,000 head. At hog breeding enterprises in the Ukrainian SSR the drainage of animal husbandry is fully utilized for the irrigation of agricultural crops.

However, a significant gap between the construction of projects and the organization of reclamation fodder production, especially near complexes for the breeding and fattening of young large-horned cattle and milk production, is observed quite often. This leads to a fodder deficiency and weakens the fodder base of complexes significantly. In connection with this it is very important to eliminate the gap between the construction of complexes and the utilization of reclaimed areas. It is necessary to promptly put them to use and to increase economic efficiency. At large complexes it is advisable to review the system of planning the sale of products secondary for a given farm to the state. This will make it possible to correct the structure of sown areas toward an expansion of the areas sown with fodder crops and to increase the production of animal products.

High grade feeding is the main factor in an efficient management of animal husbandry. At the same time, of great importance is a high provision of livestock and poultry with full-ration mixed feed. Meanwhile, the mixed feed that is used often does not meet the technological requirements of industrial production and is not balanced in amino acids, biologically active substances and other key components.

For an intensive breeding of young stock it is necessary to provide complexes with starter mixed feed and regenerated milk. When they are not available, or when their quality is poor, a higher death of young stock is observed. At present the need of animal husbandry for regenerated milk is by no means met fully. Many state, as well as all kolkhoz and interfarm complexes for pork and beef production, use whole milk without an addition of starter mixed feed for breeding young stock.

This leads to an inefficient annual expenditure of whole milk, skimmed milk and other fat-free dairy products. Meanwhile, according to calculations, a full provision of young stock with regenerated milk at animal husbandry complexes alone would make it possible to increase the utilization of whole milk for food purposes to 1.2 million tons. Its production would require a stock of 480,000 cows with a milk yield of 2,500 kg per cow. An insufficient level of feeding with a low quality of fodder and its high production cost lowers primarily the efficiency of work of livestock breeding complexes.

The supply of highly productive livestock, which should be tested for productivity and suitability for keeping under the conditions of industrial technology, to industrial animal husbandry enterprises is no less important a problem. At the same time, it is necessary to observe a regular flow of delivery of young stock in accordance with the accepted technology. This problem is solved most successfully when specialized farms for the breeding of young replacement stock are organized. As the experience of animal husbandry enterprises in Penzenskaya, Vitebskaya, Zhitomirskaya and Ternopol'skaya oblasts and in the Moldavian SSR has shown, such an organization of young stock breeding makes it possible to have quite a firm replacement base for replenishing the dairy herd with productive animals.

These farms, for example, in Zhitomirskaya Oblast, breed more than one-half of the necessary young replacement stock. The practical experience of the best specialized farms indicates that, when advanced technology is fully mastered, the period of breeding first heifers is shortened by 6 to 8 months, the increase in the live mass rises by 50 kg, productivity increases by 20 to 25 percent, labor resources are utilized most efficiently and the saving of financial resources is ensured.

It is necessary to note that animals of a low productivity are delivered to many complexes. This is connected, on the one hand, with the lack of the necessary fodder base and, on the other, with the insufficient genetic potential of animals. For example, the following characteristic feature is revealed: In regions of intensive dairy farming with a relatively high genetic stock (Moskovskaya, Leningradskaya and other oblasts) the efficiency of milk production at industrial-type enterprises is quite high (table 2).

Table 2. Efficiency of Milk Production at Complexes in Moskovskaya and Leningradskaya Oblasts

	On the Average in 10 complexes	On Specialized Sovkhozes	Indicators of Complexes in % of Indicators of Sovkhozes
Average milk yield per cow, kg	3,890	2,418	162
Expenditures per quintal of milk:			
of fodder, quintals of fodder units	1.11	1.40	79
of labor, man-hours	3.60	8.02	45
Production cost per quintal of milk, rubles	21.85	24.31	90

In regions with an insufficient genetic potential the productivity of livestock is low. For example, at five complexes in Lipetskaya Oblast, where the cost of a place for one animal was 1,910 rubles, the average milk yield per cow was 2,316 kg, labor expenditures per quintal of milk were 7.5 man-hours and fodder expenditures were 1.5 quintals of fodder units. At three complexes in Volgogradskaya Oblast, where the cost of a place for one animal was 1,814 rubles, the average milk yield was 2,282 kg, labor expenditures per quintal of milk were 7 man-hours and fodder expenditures were 1.5 quintals of fodder units. There the basic economic indicators of complexes are almost at the level of the average indicators of kolkhozes and sovkhozes, which does not meet the demands of work of enterprises with industrial technology.

The provision of industrial-type enterprises, especially dairy complexes, with capital, is much higher than that of ordinary kolkhozes and sovkhozes. An analysis of milk production in the country in the last 10 years showed that, if the entire increase in milk in the public sector during the indicated period had been obtained at dairy complexes that mastered the planned capacities, it would have been necessary to invest 30 percent more funds per ton of milk. At the same time, however, the product would have been produced with much smaller material and labor expenditures. Therefore, with the shortage of labor and fodder resources the course of development of dairy farming in the direction of its industrialization from the national economic standpoint is the most advisable, requiring less labor and fodder for the production of a unit of output. These economic factors are of decisive importance at the present stage.

In the construction of animal husbandry complexes a tendency toward an unjustified rise in their cost is revealed. A number of plans are developed with a great excess, which leads to an overexpenditure of funds mainly as a result of an increase in the construction area and in the volumes of hard surfaces, scattering of projects under construction, utilization of more expensive building structures and so forth. For example, during an expert examination of the plan for the Luzinskiy Hog Breeding Complex in Omskaya Oblast an overestimate of 3.7 million rubles in the cost of construction was revealed.

In our opinion, local agricultural bodies and the USSR Main Administration for Livestock Production on an Industrial Basis should establish strict control over the estimate documents of the plans that are at the stage of development and issue of planned assignments, not only over the finished plans. It is also necessary to intensify the control over the course of realization of plans on the part of local financial bodies in order to avoid an overexpenditure of the estimated cost of construction.

Prolonging the periods of construction of animal husbandry projects, which points to an unsatisfactory utilization of the funds allocated for this, is a restrictive factor in an accelerated transfer of the production of animal products to an industrial basis. For example, the Usol'skiy Hog Breeding Complex in Irkutskaya Oblast for 108,000 head of hogs was built over a period of 4, instead of 3, years. The Komsomolets Complex in the Kalmytskaya ASSR was built over a period of 37 months, while the norm of construction length was 16 months, the Suzdal'skiy Complex for Beef Production in Vladimirskaya Oblast for 10,000 head was built over a period of 40, instead of 28, months and so forth. All this leads to an increase in the cost of construction, overexpenditure of funds and freezing of capital investments.

It should also be stated that the development of industrial animal husbandry is hampered by the shortcomings in the provision of animal husbandry enterprises with spare equipment parts, interchangeable subassemblies and units and other material and technical facilities.

A successful solution of the examined problems will contribute to the further expansion of the network of complexes and to an increase in the economic efficiency of their work and in the production of milk, meat and eggs.

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AGRO-ECONOMICS AND ORGANIZATION

FUNCTIONS OF NEW BELORUSSIAN FOOD MINISTRY DESCRIBED

Minsk SEL'SKAYA ZHIZN' in Russian 16 Apr 81 p 2

[Interview with N.S. Yakushev, minister of the Fruit and Vegetable Economy for the Belorussian SSR by a SEL'SKAYA ZHIZN' correspondent; date and place not specified: "Fruit and Vegetable Economy of the Republic"]

> [Text] In recent years, large capital investments have been made available and used for the strengthening and development of agriculture. Noticeable increases have taken place in the yields and procurements of potatoes, vegetables, fruit and berries. However, as pointed out during the 26th CPSU Congress, the task of supplying the populations of cities and industrial centers with food products, among which vegetables occupy an important place, leaves much to be desired.
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> The CC CPSU and the USSR Council of Ministers have outlined a number of measures for improving the organization of production, procurements, processing, storage and the sale of vegetables, fruit and potatoes. A union-republic Ministry of the Fruit and Vegetable Economy for the Belorussian SSR has been formed.
>
> A correspondent of SEL'SKAYA GAZETA asked the Minister of the Fruit and Vegetable Economy, N.S. Yakushev, to answer several questions.

[Question] Nikolay Stefanovich, what will be the principal tasks of the new ministry?

[Answer] Our main goal will be that of implementing considerable and rapid improvements in the program for supplying the republic's population with vegetables, fruit, berries, potatoes and the products obtained from their processing. How will this be done? It will be accomplished first of all by increasing production, eliminating losses and by organizing efficient and well coordinated operations by all enterprises and organizations engaged in the raising, procurement, storage, transporting and sale of these products.

The new ministry is responsible for implementing a uniform technical policy with regard to the production of fruit and vegetable products, exercising control over fulfillment of the plans for forming a republic fund and over imported materials; processing the products of crop husbandry at subordinate canning and other industrial enterprises; storing of vegetables procured. At the same time, we must manage the wholesale and retail trade in vegetables and sell them through a specialized trade network to enterprises of state and cooperative trade, public catering and to childrens', medical and other institutions. The ministry must organize the inter-oblast transporting of fruit and vegetable products and potatoes. We will raise high quality planting stock and seed for fruit trees and berry patches, supply them upon request to kolkhozes and goskhozes and we will also sell them to the population. As you can see, the tasks are considerable.

[Question] Could you inform the readers of SEL'SKAYA GAZETA which organizations and institutes, farms and enterprises are being placed under the jurisdiction of your ministry?

[Answer] The decision has been made to transfer over to Minplodoovoshchkhoz [Ministerstvo plodoovoshchnogo khozyaystva; Ministry of the Fruit and Vegetable Economy] for the BSSR those specialized vegetable raising sovkhozes which earlier were attached to the MSKh [Ministry of Agriculture] for the BSSR. In addition, procurement organizations, wholesale bases, coolers for the storing of fruit and vegetable products and specialized stores will be placed under our jurisdiction. From the Ministry of Trade system for the BSSR we will obtain a portion of its motor transport facilities, a design-technological bureau with experimental production, incomplete capital construction installations and gorplodoovoshchtorg [Municipal trade organization for trade in fruit and vegetable goods].

Six specialized vegetable trusts of the MSKh for the BSSR and 46 enterprises for the processing of vegetables, fruit and berries of Minpishcheprom [Ministry of the Food Industry] for the BSSR have been transferred over to our jurisdiction. They include the following facilities: the Bykhov Agrarian Association for the Production and Industrial Processing of Vegetables and Fruit, the Baranovichi, Vitebsk, Yel'sk, Slonim, Krasnenskiy and a number of other wine and juice canning plants and the Vileyka Repair-Mechanical Workshop. The appropriate organs have been requested to examine the problem of organizing an independent Scientific Research Institute of Fruit and Vegetable Production, subordinate to our ministry, based upon the corresponding departments of the Belorussian Scientific Research Institute of Potato Production and Fruit and Vegetable Raising.

[Question] Will other enterprises and organizations be created? Will all fruit and vegetable procurements be carried out by the new ministry?

[Answer] The oblast trusts of vegetable sovkhozes of the MSKh for the BSSR and also the oblast production associations of the canning and wine-making industry of Minpishcheprom for the BSSR are being abolished. They are being replaced by the Brest, Vitebsk, Gomel', Grodno, Minsk and Mogilev Oblast cost accounting production agrarian-industrial associations for fruit and vegetable products (oblplodoovoshchi). For the purpose of ensuring that the population of Minsk is supplied with fruits, vegetables and potatoes, the Volma cost accounting association for fruit and vegetable products is being organized.

At the same time, the task of procuring technical varieties of potatoes for the alcohol and starch-molasses enterprises is being retained by Minpishcheprom for the BSSR. Just as in the past, Belkoopsoyuz [Cooperative Union of the Belorussian SSR] will procure fruit and vegetable products and potatoes from the population and from farms and enterprises not included in the procurement zone of our ministry.

The new ministry is passing through its formational period. There can be no doubt but that the organizational change that has taken place will exert a very positive effect with regard to improving the supply of fruit and vegetable products for the republic's population.

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RSFSR FARMERS FACE BROAD RANGE OF PROBLEMS

Moscow SEL'SKOYE KHOZYAYSTVO ROSSII in Russian No 4, Apr 81 pp 2-5

[Article by L. Florent'yev, minister of Agriculture for RSFSR: "Urgent Tasks of Russian Farmers"]

[Text] The agricultural workers of Russia, similar to all Soviet people, welcomed with great enthusiasm and unanimously approved the historic decisions handed down during the 26th CPSU Congress and they are devoting all of their efforts towards implementing these decisions. In the Summary Report of the CC CPSU, delivered by the General Secretary Comrade L.I. Brezhnev, the results of the great work performed by the party and people during the 1970's and the Tenth Five-Year Plan were summarized and the great prospects for further development of the Soviet economy, science and culture and for improving the welfare of the people were outlined.

The "Principal Trends for the Economic and Social Development of the USSR During the 1981-1985 Period and for the Period Up To 1990," adopted during the 26th CPSU Congress, are advancing and theoretically validating new and exceptionally important tasks for economic development and they are promoting more complete utilization of the potential of developed socialism. It is emphasized in these trends that the main task of the Eleventh Five-Year Plan is that of achieving further improvements in the welfare of the Soviet people based upon stable and progressive development of the national economy, an acceleration in scientific-technical progress, the conversion of the economy over to the intensive path of development, more rational utilization of the country's production potential, maximum economies in the use of all types of resources and improvements in the quality of work.

Towards this end and based upon the initiative of Comrade L.I. Brezhnev, a food program is being developed in the country which calls for proportional and balanced development of the entire agroindustrial complex, the strengthening of its logistical base, improvements in the economic relationships between branches, efficient interaction among them for the purpose of intensifying the production of agricultural products and improvements in storing, transporting and processing the products and in delivering them to the consumers.

The food program is based upon the need for further and more extensive development of agricultural production. A great amount of work was carried out in this branch throughout the country during the Tenth Five-Year Plan; work was continued with regard to strengthening the logistical base of kolkhozes and sovkhozes and the social development of the rural areas and this necessarily had to bring about improvements in production. In the Russian Federation, for example, despite the fact that 3 years out of 5 were unfavorable from the standpoint of weather conditions, the kolkhozes and sovkhozes increased their average annual production of grain compared to the Ninth Five-Year Plan by 10.9 million tons, sugar beets -- by 4.6, meat -- by 406,000 tons, milk -- by 1.5 million tons and eggs -- by 6.7 billion units. Increases took place in the production of other products as well. Accordingly, the procurements of the principal types of agricultural products increased. The kolkhozes and sovkhozes of the RSFSR annually sold an average of 2.6 billion poods of grain, 13 percent more than during the Ninth Five-Year Plan.

In taking note of the results achieved, it must be recognized that they still do not meet the increasing requirements of the population, especially for meat and milk and they do not conform to the potential possessed by the farms. Many kolkhozes, sovkhozes and rayons throughout the republic failed to fulfill their 5-year plans and obligations for increasing the production of grain, meat, milk and other products. Great losses are being tolerated as a result of groundless differences in productivity for fields, farms and rayons, although they have similar production conditions; this in turn is caused by a low culture of farming and animal husbandry in a number of areas. Thus the leaders and specialists of kolkhozes, sovkhozes and agricultural organs must analyze the results of the past five-year plan in a thorough and self-critical manner and make more complete and comprehensive use of the reserves and opportunities available in each rayon and on each farm. An average annual growth of no less than 12-14 percent in gross output volume can be achieved through the intensification of all branches of agriculture throughout the republic.

In the Summary Report to the 26th party congress, Comrade L.I. Brezhnev pointed out that one priority task is that of increasing the production of those types of products, the shortages of which are causing noticeable interruptions in supply. Here we have in mind mainly meat and other animal husbandry products. In order to make more complete use of all reserves and opportunities for this purpose, measures should be undertaken aimed at strengthening the feed base. Since the requirements for bread grain are being satisfied fully, more effort is being directed towards the raising of forage grain crops, the proportion of which with regard to overall grain production must be raised considerably. Ideally the grain corn and soybean plantings should be expanded and the production of peas and other crops rich in protein and also barley and oats should be increased.

During the Eleventh Five-Year Plan, the average annual production of grain in the RSFSR must reach 134-136 million tons. For comparison: during the Tenth Five-Year Plan, an annual average of 113.8 million tons of grain was obtained and during the most productive year of 1978 -- 136.5. The principal means for solving this task is that of raising cropping power. Estimates reveal that in order to satisfy all of the republic's grain requirements and especially animal husbandry's requirements for forage, no less than 20-22 quintals of grain per hectare will be required on a steady basis. This will not be easy to achieve, particularly when one realizes that only 14 quintals per hectare were obtained in 1980 and during the most productive year of 1978 -- 17.7 quintals per hectare. Nevertheless the requirement is a very important and necessary one.

A special session of the RSFSR Council of Ministers, held in November 1980, was dedicated to analyzing in detail an all-round program for increasing the production of grain. This session involved participation by party and soviet workers, the leaders of agricultural organs and leading scientists and specialists. In a decision adopted by the government, emphasis is placed upon the need for developing and carrying out, at each kolkhoz and sovkhoz and in each oblast, kray and autonomous republic, scientifically sound systems for agricultural management, including the development of correct crop rotation plans. An enlargement of the crop rotation plan areas and fields themselves will serve to promote improvements in their efficiency; this has been proven in actual practice on many farms in Stavropol'skiy Kray and in Saratovskaya, Voronezhskaya and a number of other oblasts.

The system of soil protection has become an important factor for raising the culture of farming. By the end of the Eleventh Five-Year Plan, the area of arable land cultivated using the non-mouldboard method will have increased to 26 million hectares, compared to just 14.2 million hectares last year. The campaign against water erosion of soils, especially on farms in the nonchernozem zone and the TsChO [Central Black Earth Region], will be carried out in a considerably more efficient manner.

Greater use will be made of chemical processes in farming and particularly in connection with the grain economy. The increase in the deliveries of mineral fertilizers to the rural areas is now making it possible to use all or almost all of the increase in behalf of the grain and forage crops. Special importance is being attached to achieving a considerable increase in the procurements and applications of organic fertilizers (this determines to a large degree the effectiveness of the mineral fertilizers) and to expanding the liming of acid soils. Here a great deal will be dependent upon strengthening the production base of Rossel'khozkhimiya enterprises, introducing the flow-line methods for organizing operations on an extensive scale in all areas and stimulating highly productive labor by the machine operators.

In the campaign to obtain high and stable yields of grain, feed, vegetables and other products, land reclamation is playing a very substantial role. At the beginning of this current year, the area of irrigated and drained land in the RSFSR was 8.5 million hectares. These lands are producing all of the rice, 67 percent of the vegetables, almost one half of the grapes and 23 percent of the fruit and berries. Land reclamation work has unfolded on a particularly large scale in the Volga region, in the north Caucasus and in the nonchernozem zone.

The Eleventh Five-Year Plan calls for the placing in operation, by means of state capital investments, 3.4-3.6 million additional hectares of irrigated and 3.7-3.9 million hectares of drained land and to irrigate 26-28 million hectares of pasture land in the desert, semi-desert and mountainous regions. Under these conditions, the efforts of the kolkhozes, sovkhozes and agricultural and aquicultural organs are being directed towards raising considerably the effectiveness of the irrigated and drained lands, the culture of reclamative farming and also the crop yields.

Recently, improvements have been realized throughout the republic in seed production for the agricultural crops and in the varietal structure, the introduction of new varieties into production operations has been accelerated and the quality of the seed has been improved. However, by no means has everything been done here. On a number of farms and in a number of rayons, the new varieties are being introduced into operations very slowly and the sowing of low quality seed and even non-graded seed is being tolerated. The production of seed for pulse and groat crops and perennial grasses is lagging behind the production requirements. Serious complaints in this regard are being addressed against the agronomic services in Novgorodskaya, Pskovskaya, Bryanskaya, Kalininskaya, Kostromskaya, Irkutskaya and some other oblasts, krays and autonomous republics. Hence, one of the most important tasks is that of implementing improvements in seed production operations, strengthening the logistical base of this branch and converting it over to an industrial basis more rapidly. And here there are good examples to follow. Fine experience in achieving good solutions for the mentioned problems has been accumulated on farms in the Kuban', in Stavropol'skiy Kray, in Rostovskaya, Saratovskaya, Omskaya and Orenburgskaya Oblasts and in the Bashkirskaya ASSR.

The plant breeding process must be accelerated so that, within a short period of time, production will be supplied with more early ripening varieties of wheat having a higher content of protein and resistance to diseases -- for rayons in the Volga, Urals and Siberian regions; intensive early ripening varieties of forage crops -- barley and oats, resistant to lodging and diseases -- for the nonchernozem zone.

The republic's agronomic service must continue, in a more persistent manner, its work of improving the structure of the grain fields so that it conforms, to the best of its ability, to the natural-economic conditions and the current tasks of agriculture. Here we have in mind the growth in the production of pulse, forage and groat crops, especially buckwheat and millet. Based upon experience accumulated in the Kuban' and other regions, we will simultaneously undertake measures to improve the quality of the grain considerably, especially on farms in the Volga region, the TsChO and in the Urals and Siberia.

The republic's kolkhozes, sovkhozes and agricultural organs must devote special attention to the sunflowers, sugar beets, flax, potatoes, vegetables and fruit and achieve accelerated rates of growth in their production. In order to improve the supply of oil for the population, the plans call for the average annual production of sunflower seed during the Eleventh Five-Year Plan to be increased by a factor of 1.3. The principal means for solving this task is that of raising cropping power based upon the introduction of an industrial technology for cultivating this crop and radical improvements in seed production both at the kolkhozes and sovkhozes and at the scientific institutes.

A great amount of work must be performed by the republic's beet growing farms; they plan to raise their average annual production of sugar beets to 33-34 million tons, compared to 25.4 during the Tenth Five-Year Plan. The conversion of beet production over to an industrial technology will also be carried out here in a gradual manner. In this regard, we are expecting an increase in the deliveries of effective herbicides, row-crop tractors, highly productive beet loaders and other items of equipment, since this year the new technology will be employed for cultivating 70,000 hectares of sugar beets. The yield of roots will increase during the five-year period to 220-250 quintals per hectare.

The kolkhozes and sovkhozes are implementing in a systematic manner a special purpose that was prepared in the republic for developing potato production, a system which calls for all-round mechanization of the branch, improvements in the technology for cultivating the crop, high quality preparation of the seed potatoes, planting of the potatoes at a good agrotechnical level with a norm of 55,000-60,000 tubers per hectare and ensuring the timely tending of the crop and the carrying out of protective measures against pests and diseases. The scientists and specialists are striving to achieve further improvements in intrafarm seed production, to improve the varietal structure considerably and to convert over rapidly to cultivating potatoes using high reproductions.

For realizing improvements in vegetable production during the next few years, the plans on the whole call for the vegetable crop plantings to be converted over to irrigation, intensively, with a high return to be realized from each hectare of irrigated land; to continue the work of concentrating the plantings of marketable vegetables at specialized farms; to raise the culture of branch management; to close off all channels for possible crop losses during the harvesting, transporting and storage of the vegetables; sharply improve their quality and assortment.

A great amount of work must be carried out in connection with the vast program for the construction of hothouse combines under glass and plastic, particularly in the vicinity of large cities, industrial centers, resort zones and along the BAM [Baykal-Amur Trunk Line]. The recently created Ministry of the Fruit and Vegetable Economy will promote the successful solving of these tasks.

During the Eleventh Five-Year Plan, there will also be a requirement for increasing the production and improving the quality of flax products. This is why we must practice preparing the stock at the flax plants on a more extensive scale, in order to eliminate the risks which the farms are subject to when spreading out the straw. Special attention is being given to improving the production of flax seed, for which purpose its logistical base at the kolkhozes, sovkhozes and flax seed stations is being strengthened.

The tasks confronting the republic's farms with regard to increasing the production and procurements of grain, meat, milk and other agricultural products are great and important, however the opportunities today are quite different. It is sufficient to state that by the beginning of 1981 the principal food funds of the kolkhozes and sovkhozes had reached 106 billion rubles, compared to only 26 at the beginning of 1966. Today there are powerful levers for improving production in operation, such as modern equipment, large areas of irrigated and drained lands, the use of chemical processes and new achievements of science and leading experience. The effective utilization of these levers is required in all areas. This gives rise to one of our most important responsibilities: to ensure maximum use of the technical potential of the machines in all areas, to disseminate extensively and improve upon the Ipatovo experience in large-group flow line organization of operations and to introduce actively the experience of the southern regions of the republic in the use of hourly and daily harvesting schedules, double-shift and watch organization of labor, controlled thrashings and wages for the quality of the harvest work.

At the present time, an extensive experiment is being carried out in Stavropol'skiy Kray and in a number of other regions in connection with utilizing the advantages offered by interenterprise cooperation for improving the operation and technical servicing of the machine-tractor pool. And the initial results are reassuring.

In the future, the party and government will supply agriculture with considerable financial and material resources and continue to convert the branch over to an industrial basis. But the main concern today -- and this is a distinctive feature of the agrarian policies during the 1980's -- is the fact that the center of gravity is shifting to the return from capital investments, to growth in the productivity of farms and fields and to strengthening and improving the links between agriculture and all branches of the agroindustrial complex.

The implementation of scientifically sound systems for agricultural management involves creative work and the best results are obtained when they are employed in each zone and region and on each farm, taking into account their specific conditions and peculiarities. An overall requirement and a most important indicator of the effectiveness of a particular system or measure in farming and animal husbandry is growth in gross output production, improvements in product quality and fulfillment of all obligations to the state. This is prompted by the large scale measures adopted by the party and government for improving planning and economic stimulation for the production and procurements of agricultural products, measures which call for improvements in the economic mechanism in agriculture, the introduction of cost accounting and strengthening of the kolkhoz and sovkhoz economies.

In his report delivered before the 26th party congress, Comrade L.I. Brezhnev stated that animal husbandry constituted an urgent front for work to be carried out in the rural areas. The principal trends for economic and social development in the RSFSR call for the average annual production of meat in dressed weight to be no less than 8.4-8.7 million tons during the Eleventh Five-Year Plan, compared to only 7.4 during the Tenth Five-Year Plan; milk -- 50-52 million tons, compared to 48.2; wool -- 35,000-240,000 tons,,compared to 226,000 tons. Such results can be achieved through intensification of the branch, raising the milk yields and weight increases in the livestock, shortening the fattening periods, improving the reproduction of the herd, achieving further production specialization and concentration, making more complete use of the capabilities of large farms and complexes engaged in the production of beef, pork, eggs and poultry meat and increasing the production of animal husbandry products at non-specialized kolkhozes and sovkhozes. Greater attention must be given to the private plots of the rural population. This is called for in the decree of the CC CPSU and the USSR Council of Ministers entitled "Additional Measures For Increasing the Production of Agricultural Products on the Private Plots of Citizens."

A decisive condition for achieving a considerable increase in the production of animal husbandry products and raising the efficiency of the branch is that of increasing the production of diverse and high quality feeds. In conformity with the decisions handed down during the July (1978) Plenum of the CC CPSU, a comprehensive program has been developed and is being implemented at each kolkhoz and sovkhoz and in each rayon, aimed at intensifying field feed production and raising the productivity of the meadows and pastures, introducing progressive technologies for the procurement, storage and processing of feed on an extensive scale and converting the branch into an independent and specialized branch in a planned manner. For strengthening the production base for feed production during the Eleventh Five-Year Plan, 4.1 billion rubles worth of capital investments are being made available, compared to only 2.4 billion during the past five-year plan and only 400 million during the Ninth Five-Year Plan.

The measures thus undertaken are making it possible to increase the production of hay, food roots, haylage and silage and to improve their quality. During this present five-year plan, the average annual production of coarse and succulent feed will reach 76.6 million feed units, or 35 percent more than during the Tenth Five-Year Plan. The plantings of peas, lupine, soybeans, alfalfa, clover, rape and other high protein crops will be expanded considerably.

The agricultural workers in the nonchernozem zone are confronted by great tasks during this new five-year plan. Work will be continued here in connection with implementing a broad and comprehensive program or measures for transforming the zone into a region of highly productive farming and animal husbandry; high rates of development are planned for agriculture in this region.

The planned improvements in the branch's economy are directly associated with solving the social problems in the rural areas. Although a considerable amount of work has been carried out in this regard throughout the republic, nevertheless a great amount of work still remains to be completed. It is impossible not to note that many kolkhozes and sovkhozes still lack housing, they have a low level of organization of public facilities and amenities and they are experiencing a shortage of cultural institutes, schools and good roads. Serious shortcomings are being noted in the organization of work and in the working conditions for kolkhoz members and sovkhoz workers. All of these factors are creating difficulties with regard to the formation of stable labor collectives and they are resulting in personnel turnover.

During the Eleventh Five-Year Plan, the capital investments for housing and cultural construction at sovkhozes will reach almost 12 billion rubles and at kolkhozes -- 6.5; these figures are considerably greater than those for the Tenth Five-Year Plan. We will consistently carry out the instruction by Comrade L.I. Brezhnev concerning the fact that the problems of reorganization of the rural areas must be resolved in an energetic and thorough manner, by procuring the required resources both from the state and also from the republics, oblasts and also from each kolkhoz and sovkhoz. Understandably, a considerable expansion in housing, cultural-domestic and highway construction in the rural areas will require more active participation in this work by the construction ministries and departments and supporting enterprises and organizations and the allocation to the rural construction projects of the required construction materials and sanitary engineering and other types of equipment.

Inspired by the historic decisions handed down during the 26th CPSU Congress, the agricultural workers of Russia have launched an extensive socialist competition for the fulfillment of the 1981 plans and the raised socialist obligations undertaken for the first year of the five-year plan. In 1981 the republic must sell to the state 55 million tons of grain, 31 million tons of sugar beets, 2.6 million tons of sunflowers, 200,000 tons of flax fibre, 10.7 million tons of potatoes, 7.6 million tons of vegetables, 8.6 million tons of livestock and poultry (in live weight), 32.2 million tons of milk, 26.5 billion eggs and 260,000 tons of wool.

At the present time, spring field work is at its peak out on the Russian fields. Measures must be undertaken to protect all of the winter crop areas in an organized and rapid manner and on a high agrotechnical level, to carry out the spring sowing and tending of the crops and to make timely preparations for the busy harvest season.

This year, in addition to expanding their use of industrial technologies for the production of sugar beets, sunflowers, soybeans and a number of other crops, the kolkhozes and sovkhozes must also ensure that these technologies are employed in a highly effective manner.

The leaders and specialists of the farms and agricultural organs are obligated to analyze thoroughly the experience accumulated last year, eliminate all shortcomings tolerated and define an efficient system of measures for ensuring that high yields will be obtained and for increasing the productivity of the animals.

There can be no doubt but that the agricultural workers of Russia, under the direction of the party organizations will make a worthy contribution towards implementing the historic decisions of the 26th CPSU Congress and successfully fulfill the plans and socialist obligations outlined for 1981 and the five-year plan on the whole, with regard to increasing the production of grain, meat, milk and other products and raising the efficiency of agricultural production.

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TILLING AND CROPPING TECHNOLOGY

PARTY EVIDENCES CONCERN FOR INCREASED GRAIN PRODUCTION

Moscow PLANOVOYE KHOZYAYSTVO in Russian No 4, Apr 81 pp 90-96

[Article by A. Gol'tsov, deputy minister of Agriculture for the USSR: "Growth in the Production of Grain -- A Most Important Task of the Eleventh Five-Year Plan"]

[Text] One of the main trends in the agrarian policies of the Communist Party and Soviet State during this modern stage is that of further intensification of farming and, on this basis, complete satisfaction of the country's requirements for food goods and agricultural raw materials. Concern for the grain crops and a maximum increase in the production of grain has always received and will continue to receive a great amount of attention on the part of our party.

The General Secretary of the CC CPSU and Chairman of the Presidium of the USSR Supreme Soviet, L.I. Brezhnev, in a speech delivered before the 26th CPSU Congress, stated: "In view of the fact that the requirement for bread grain is being satisfied fully, emphasis must be placed upon the growing of forage grain crops. Their proportion with regard to the gross yield of grain crops must be raised considerably"*. In solving this task, as pointed out by L.I. Brezhnev, we must use our entire arsenal of agrotechnical methods and all opportunities and reserves and we must subordinate the work of the local party, soviet and agricultural organs, the farm leaders and specialists and the sovkhoz and kolkhoz workers towards achieving this goal.

In the Basic Directions for the Economic and Social Development of the USSR During the Period 1981-1985 and For the Period Up To 1990, approved during the 26th CPSU Congress, the plans call for the average annual production of grain during the Eleventh Five-Year Plan to be raised to 238-243 million tons. Steady improvements in the welfare of the people and strengthening of the country's economic might are associated with the grain problem.

During the 1950's, when the country was confronted by a tense situation with regard to the production of bread and forage grain, the party adopted a long-range solution for sharply and rapidly increasing the production of grain through the development of virgin and long fallow lands in the regions of Kazakhstan, Siberia, the Urals, the Volga region and partially in the north Caucasus region. Life has fully confirmed the correctness and great vital force of the gigantic program developed by the party for mastering the virgin and long fallow lands.

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* PRAVDA, 1981, 24 February.

In the steppe regions of the country, almost 42 million hectares of new land were developed into arable land, including in the Kazakh SSR -- 25.5 million and the Russian Federation -- 16.3 million hectares, of which amount in Siberia and the Far East -- 11.1 million, in the Urals region -- 2.9 million and in the Volga region -- 2.3 million hectares. The mastering of the new lands transformed the virgin land regions of the country into large producers of grain, especially bread grain. As a result of the plowing up of the new lands, the sowing area for grain crops in these regions increased by a factor of 1.8 and the gross yield of grain increased by more than threefold. Prior to 1965, growth in the production of grain was achieved mainly by expanding the areas used for the growing of grain crops.

The foundation for this new stage in the development of grain production was established during the March (1965) Plenum of the CC CPSU. A general program was developed by the party for the comprehensive intensification of grain production through complex mechanization, the use of chemical processes, land reclamation and the use of new and progressive technologies for the cultivation of grain crops. The increase in the gross yield of grain during subsequent five-year plans was achieved mainly as a result of improved cropping power.

During the 1965-1980 period, a number of large-scale measures aimed at increasing grain production were implemented throughout the country. The application of mineral fertilizers in behalf of grain crops increased from 5.4 million to 30.4 million tons. The pool of tractors increased from 1.5 million to 2.6 million and grain harvesting combines -- from 512,000 to 720,000 units; this ensured a considerable reduction in the schedules for carrying out the sowing and harvesting work. The introduction of non-mouldboard tilling of the soil on almost 40 million hectares and the sowing of grain crops on 38 million hectares using anti-erosion sowing machines made it possible to halt the wind erosion of soils and to raise the cropping power of grain crops in the arid steppe regions of the country. The area of irrigated land increased roughly from 10 million to 17.3 million hectares and drained land -- from 7.5 million to 12.6 million hectares. An increase took place in the volumes of work carried out in connection with protecting crops against weeds, pests and diseases; new and highly productive grain crop varieties and hybrids were introduced into operations on rather large areas.

This made it possible to raise the average annual production of grain during the 1976-1980 period to 205 million tons compared to only 130.4 million tons during the 1961-1965 period. Hence, during the Tenth Five-Year Plan, for the very first time, the average annual gross yield of grain in the USSR exceeded the 200 million mark. At the same time, substantial fluctuations were observed in the gross yield of grain during individual years.

Since the opportunities for expanding the arable lands have for all practical purposes been exhausted and the grain crop areas in recent years have stabilized at the level of 127-128 million hectares, the plans for the Eleventh Five-Year Plan call for the grain crop growing area to remain at this same level. The decisive trend with regard to achieving growth in grain production can only be that of raising the cropping power of the grain crops in every possible way. In order to ensure fulfillment of the established tasks with regard to the gross yield of grain during the Eleventh Five-Year Plan, the cropping power of the grain crops must be raised to 19.1 quintals per hectare on the average for the USSR, that is, by more than 3 quintals per hectare, compared to what was achieved during the Tenth Five-Year Plan.

Scientific studies and the operational experience of kolkhozes and sovkhozes testify to the fact that such rates for raising the cropping power of grain crops are realistic. They can be achieved based upon the introduction of scientifically sound farming systems at each farm, systems which include a complex of measures: mastering of correct crop rotation plans, more improved soil cultivation systems; the carrying out of anti-erosion measures; improvements in seed production and the accelerated introduction of new varieties and hybrids; conversion of the cultivation of the principal crops over to an industrial technology; an increase in the applications and more efficient use of mineral and organic fertilizers; expanding the plantings on reclaimed lands; curtailing the work schedules; reducing crop losses by improving the technical equipping of the grain economy.

The soil and climatic conditions in the principal grain production regions in our country are diverse and complicated. This raises the persistent need for developing and introducing scientifically sound farming systems in each oblast, kray and autonomous republic. This will make it possible to take into account more completely their diverse soil-climatic and economic conditions and substantially raise the efficiency and stability of the grain economy and farming on the whole.

More than two thirds of the grain crop growing areas are concentrated in a dry climate zone, where the stability of grain production is greatly dependent upon the availability of moisture in the soil. Thus the system of farming here must be directed towards the retention, accumulation and efficient use of the soil moisture and also available water resources.

In the interest of increasing the production of grain, it is necessary first of all to raise the efficiency of use of irrigated lands. A great amount of work must be carried out aimed at improving the operation of such land. Extreme importance is attached to developing and introducing into operations on these lands specialized farming systems, growing only high yield crops and intensive varieties which are more suitable for irrigation conditions and ensuring that irrigation farming is fully supplied with the required fertilizers and equipment. During the years of the Eleventh Five-Year Plan, 3.4-3.6 million hectares of new irrigated land will be placed in operation. The plans call for the greatest volume of irrigation work to be carried out in the arid grain regions of the country: the Volga region, the north Caucasus and the southern Ukraine. During the 1981-1985 period, construction work will be completed on such large-scale projects as the Kuybyshev Canal, the Komsomol'skaya, Volgogradskaya and Gorodishchenskaya irrigation systems in the Volga region, the fourth phase of the Great Stavropol' Canal in the north Caucasus and the Severo-Rogachinskaya and Kakhovka irrigation systems in the Ukrainian SSR. Estimates have shown that it is possible on irrigated lands to increase grain production considerably and raise its gross yield, together with corn, to 21 million tons by 1985.

One of the most important factors for ensuring the retention and accumulation of moisture and raising the cropping power of grain crops in the arid regions of the country is that of carrying out a complex of measures here aimed at protecting the soils against wind erosion based upon the soil-protective technology for the cultivation of grain crops. According to the data of scientific institutes, there are approximately 60 million hectares of arable land in the country which can be subject to wind erosion, including in the Kazakh SSR -- 24 million hectares, in the RSFSR (mainly in the Volga region, the north Caucasus, the Urals and Siberia) -- 28 million and in the Ukraine -- approximately 6 million hectares. In this regard, the introduction into these regions of a soil-protective technology for the cultivation of grain crops (non-mouldboard tilling of the soil and sowing carried out using anti-erosion sowing machines) is obligatory. In 1980, this technology was mastered on 27 million hectares.

The soil-protective system has become a firm part of farming in the north Caucasus and western Siberia and as agriculture is supplied with greater quantities of anti-erosion equipment it will be employed more extensively on kolkhozes and sovkhozes in the Volga region, the north Caucasus, the southern Ukraine, the Urals and eastern Siberia. The planned delivery during the Eleventh Five-Year Plan of a complex of machines for combating wind erosion of the soil will make it possible to increase the area of use of the anti-erosion technology for the cultivation of grain crops to 54 million hectares by 1985. The introduction of a complex of soil-protective measures on almost the entire area of deflation-vulnerable arable land will make it possible to protect the soil against wind erosion, lessen the adverse effects of droughts, protect the fertility of the fields and, as revealed by estimates, produce more than 5 million additional tons of grain.

A reliable guarantee for raising the stability of grain production in the arid regions is that of including optimum amounts of clean fallow in the crop rotation plans. The role of clean fallow has increased considerably in recent years owing to the extensive introduction of intensive type varieties, which require adequate quantities of nutrients and moisture in order to realize their high yield qualities.

Earlier, deviations from the scientific recommendations were tolerated in a number of zones and oblasts throughout the country. Measures are presently being undertaken to restore the required area of clean fallow. The Eleventh Five-Year Plan calls for the area of clean fallow in the arid regions to be increased to the optimum amount recommended by science and for it to reach 19.5 million hectares for the country as a whole, compared to only 14 million hectares in 1980. This will be accomplished by means of an expansion in the arable land, a reduction in the areas used for annual and perennial grasses and by converting their plantings over to cleared low productivity natural feed lands.

The operational experience, under arid conditions, of kolkhozes and sovkhozes in Omskaya Oblast has proven to be very instructive. In conformity with the soil-climatic conditions, a scientifically sound system of farming has been developed here and is being introduced successfully into operations. This system is based upon the use of grain-fallow crop rotation plans having a brief rotation, a soil-protective system of soil cultivation and other anti-erosion measures and also upon grain crop varieties which produce higher yields and which are adaptable to the severe local conditions. The introduction of this system of farming has made it possible to increase grain production considerably and improve the stability of the grain economy throughout the oblast, as borne out by the data furnished in the following table.

Years	Gross Yield, in thousands of tons	Cropping Power, in quintals per hectare
1961-1965	1821	6.6
1966-1970	2590	10.2
1971-1975	3003	12.9
1976-1980	3583	15.0

A further increase in the gross yield of grain requires further improvements in the structure of the grain fields through an expansion, in each zone, of the plantings of more productive grain crops. In many regions of the European part of the country this includes winter wheat and rye, barley and oats and in the southern zone -- corn. In the grain regions of western Siberia and northern Kazakhstan, the best yields are produced by spring barley.

In connection with the increasing requirements for fodder grain over the past few years, a greater amount of attention is being given to the cultivation of grain forage crops. As a result, the growing area for barley, on the average for the 1976-1980 period and compared to the 1966-1970 period, has been expanded from 20 million to 34 million hectares, oats -- from 9 million to 12 million hectares, mainly through a reduction in the plantings of the less productive spring wheat. Since the harvesting period for barley is brief, the plantings of this crop will be expanded gradually, as an increase takes place in the harvesting equipment being delivered to the kolkhozes and sovkhozes.

In 1985, based upon the anticipated logistical support for the branch, a considerable expansion should take place in the growing areas for barley in the nonchernozem zone of the RSFSR, western Siberia and oblasts in the Kazakh SSR and an increase will also take place in the cropping power of the grain forage crops. This will make it possible, during the next few years, to increase the production of forage grain considerably.

In order to balance the feed rations, the production of pulse crops must be expanded. At the present time, such production is not meeting the requirements of animal husbandry. On the average for the 1976-1980 period, the growing area for these crops amounted to only 5 million hectares, their cropping power -- 13.7 quintals per hectare and the gross yield -- approximately 7 million tons.

An increase in the production of pulse crops requires that special attention be given to their cultivation by the agricultural organs, kolkhozes and sovkhozes. From a practical standpoint, this will be carried out both by expanding the growing areas and by utilizing the reserves available for raising the cropping power. The plans call for the pulse crop growing areas to be increased to 8 million hectares and for their cropping power to be raised to an average of 17.5 quintals per hectare for the country as a whole. As a result, their gross yield will increase to 14 million tons by 1985. This will make it possible to allocate 8.5-9 million tons of high protein grain for forage purposes and to create the seed stock required for sowing pulse crops for green feed, haylage and grass meal.

An increase in the production of pulse crops will be carried out in all zones throughout the country. However, taking into account the soil-climatic conditions and the requirements of the republics and oblasts for fodder grain obtained from pulse crops, a definite concentration is expected in their production. At the same time, the plans call for a considerable expansion in the plantings, an improvement in the agricultural cropping practices and, on this basis, an increase in the production of such valuable food pulse crops as beans and lentils.

In connection with increasing the production of grain and supplying animal husbandry with full value feeds, a great role is played by corn. This crop, in the zone where it ripens for grain, surpasses other grain crops to a considerable degree in terms of cropping power. The cropping power of corn is increasing in a stable manner throughout the country. During the Seventh Five-Year Plan, it amounted to 22.8 quintals per hectare and during the Tenth Five-Year Plan -- approximately 32.5 quintals per hectare.

However, the production of grain corn has still not reached the required level. Growth in the production of grain corn is being delayed by the absence of early ripening hybrids; a shortage of highly productive machines for ensuring the high quality carrying out of operations concerned with the cultivation, harvesting and post-harvest processing of corn seed and grain; insufficient allocations of fertilizers and herbicides.

The main direction to be followed for increasing the production of grain corn is that of introducing into operations an industrial cultivation technology which will make it possible to obtain higher yields with less labor and material expenditures per unit of output. This is being confirmed in a very convincing manner by extensive production experience in the introduction of and industrial cultivation technology for grain corn in the Moldavian SSR and in a number of other corn producing regions throughout the country. In 1980, this technology was employed for growing corn on an area of more than 1 million hectares, including 345,000 hectares in the Moldavian SSR. The average cropping power for corn grown according to the new technology was 39 quintals per hectare for the country as a whole and for the Moldavian SSR -- 45 quintals, or 10 and 12 quintals higher respectively than that obtained when use was made of the conventional cultivation technology. Early ripening hybrids, a complex of special machines and the requisite amounts of mineral fertilizers and highly effective hybrids are all required for the extensive use of this progressive technology.

An expansion of the grain corn plantings to 4.4 million hectares, including up to 1.1 million hectares on irrigated lands, the concentration of the plantings of this crop on farms located in zones considered to be more favorable for its cultivation and the introduction of the industrial technology on 3.8 million hectares will make it possible, by 1985, to increase corn production by twofold or up to 20 million tons.

In improving the structure of the grain fields, great importance is being attached to expanding the plantings of winter crops. Based upon the potential possessed by intensive varieties of winter wheat to furnish yields of up to 80-90 quintals per hectare, it has been proposed that the plantings of this crop be increased to 26 million hectares over the next few years. For satisfying the national economic requirements for winter rye grain, its plantings will be expanded to 9 million hectares and thus, in all, 37 million hectares will be occupied by winter crops for grain.

In the interest of revealing more fully the potential possessed by the intensive varieties of winter crops, measures are being taken to plant them following the best predecessor crops. This will be accomplished by expanding the plantings of pulse crops, increasing the areas of clean and occupied fallow, raising the dosages of mineral fertilizer, applying lime to acid soils and raising the level of mechanization of grain production. The required carry-over funds of winter crop seed will be created on farms in the nonchernozem zone, the central Volga region, the southern Urals and Siberia. All of these factors must serve to raise the gross yield of winter crop grain to 80 million tons, including rye to 15 million tons.

During the past few years, the level of production for buckwheat and millet grain has not been satisfying the requirements of the country's population. The union republics are presently carrying out work aimed at increasing the production of millet and buckwheat. The growing of these crops is being concentrated in regions having more favorable cultivation conditions, the logistical base of the farms is being strengthened and improvements are being realized with regard to supplying the farms with mineral fertilizers.

The operational experience of farms in Nezhinskiy Rayon of Chernigovskaya Oblast and in Aznakayevskiy Rayon in the Tatarskaya ASSR, with regard to increasing the production of buckwheat, has been very instructive. Here a high concentration of the plantings and specialization by the brigades and teams have served to produce high annual yields. During the 1976-1980 period, the average cropping power for buckwheat reached almost 14.6 quintals per hectare in Nezhinskiy Rayon and in Aznakayevskiy Rayon -- 10.1 quintals per hectare.

In the future it will be necessary to undertake measures aimed at intensifying production specialization for the mentioned crops, the concentration of buckwheat and millet plantings in specialized brigades and teams, the introduction of a progressive technology for their cultivation and also an expansion in the secondary sowings of these crops in the southern regions of the country and particularly on irrigated lands. By 1985, the plans call for buckwheat to occupy no less than 1.8 million hectares and millet 3.1 million hectares and for the gross yield of grain for these crops to be in excess of 5 million tons.

Following the May (1966) Plenum of the CC CPSU, a considerable amount of work was carried out in the country in connection with the development of rice growing and ensuring that the population is supplied with internally produced rice. Within a brief period of time, the logistical base for domestic rice growing was created, training was provided for cadres of rice growers and a new branch of agricultural production -- rice growing -- came into being. During this period, the growing area for rice increased by a factor of 2.7 and the annual production of rice increased by 2 million tons.

The Eleventh Five-Year Plan calls for the rice plantings to be expanded to an area of 192,000 hectares, mainly in regions of the Far East, in the Kalmytskaya ASSR and along the lower reaches of the Amu-Dar'ya River in Uzbekistan and the Ili River in Kazakhstan. The increase in rice production will be achieved by raising the cropping power, employing a progressive cultivation technology, ensuring that the plantings are fully supplied with fertilizers and effective herbicides, equipping the rice growing farms with a complex of special machines and also by expanding the growing areas.

The production of durum wheat will be increased. The plans call for the cultivation of this crop to be concentrated mainly in the Bashkirskaya ASSR, in Saratovskaya, Kuybyshevskaya, Orenburgskaya, Chelyabinskaya, Omskaya and Novosibirskaya Oblasts and in northern Kazakhstan, so as to raise the annual volume of commodity grain to 3 million tons, that is, in full satisfaction of the requirements of the food industry for this product.

The solving of the tasks set forth during the 26th CPSU Congress, with regard to increasing the production of grain, will be dependent to a considerable degree upon improvements being realized in plant breeding work and seed production for the grain crops. The most important trends in these areas at the present time are: the creation of grain crop varieties and hybrids for cultivation of irrigated lands; intensive plant breeding aimed at raising the quality of the output and achieving yield stability; creating varieties which are not susceptible to pests and diseases and which are suitable for mechanized grain production technologies; accelerating the evaluation and introduction of new varieties and, on this basis, changing the varieties more rapidly than in the past.

During the years of the Tenth Five-Year Plan, 149 new varieties of grain crops were regionalized throughout the country, including 35 varieties of winter wheat. Of this number, 17 varieties achieved their level of potential cropping power -- 80-90 quintals per hectare. Today agriculture has at its disposal intensive, short stalk, winter-hardy and lodging resistant varieties of winter wheat.

For example, the Akhtyrchanka variety, bred at the Ivanovskaya Experimental Plant Breeding Station, furnished a yield of 92 quintals per hectare during state strain testing carried out under the conditions found in Krymskaya Oblast. At the Kolkhoz imeni Zhdanov in Poltavskaya Oblast, this variety produced a yield of 60 quintals per hectare under the usual production conditions. During tests carried out at the Przheval'sk State Strain Testing Station in the Kirghiz SSR, on such varieties as Polukarlikovaya-49 and Eritrospermum-80, created for irrigated lands, the cropping power reached 100 quintals per hectare.

During state testing carried out in Kirovogradskaya Oblast on the Odesskaya-66 variety, bred at the All-Union Plant Breeding Genetics Institute, the yield exceeded 94 quintals per hectare and the Ukraina Kolkhoz, in this same oblast, obtained 70 quintals of grain per hectare under production conditions.

During the 1976-1980 period, 13 new varieties of winter rye were regionalized. The Chulpan variety of winter rye, created by plant breeders at the Bashkir Scientific-Research Institute of Agriculture, is characterized by short non-lodging stalks and a cropping power of 50-60 quintals per hectare.

During the Eleventh Five-Year Plan, the plant breeding centers throughout the country plan to consign to state testing 50 new varieties of winter wheat, including 20 during the next 2 years and also no less than 20 new varieties of winter rye.

Substantial results were achieved in the breeding of new and highly productive varieties of spring wheat which are distinguished by resistance against droughts and lodging. This includes the Tselinnaya-21 variety which was bred at the All-Union Scientific Research Institute of the Grain Economy, the Almaz durum wheat variety which was bred at the Siberian Scientific Research Institute of Agriculture and the Mironovskaya-yarovaya and Shadrinskaya varieties which were bred at the Shadrinsk Agricultural Experimental Station in Kurganskaya Oblast. Fine results have been obtained in the breeding of oats and pulse crops. Thus the cropping power of the Neosypayushchiysya-1 pea variety, bred at the Voroshilovgrad State Experimental Station, fluctuated from 45 to 60 quintals per hectare in a number of oblasts under state strain testing conditions.

During the Tenth Five-Year Plan, 34 new varieties of spring barley were regionalized. The most valuable of them were the Donetskiy-8, Nosovskiy-9 and Nadya varieties. During the 1981-1985 period, 54 varieties of spring barley will be consigned to state testing. They will include varieties having a raised drought resistance, a raised protein and lysine content and varieties which are early ripening, short stalk and resistant to lodging.

New varieties of rice were developed. The Spal'chik variety, bred at the All-Union Scientific Research Institute of Rice, produced a yield of 110 quintals per hectare during state testing carried out in Krymskaya Oblast.

The plant breeders accomplished a great deal towards achieving the planned growth in cropping power and the gross yield of grain. However, the level achieved in plant breeding and seed production for some grain, pulse and groat crops and corn still does not fully meet the requirements for modern intensive farming. As yet, cold resistant early ripening varieties of corn have not been created; very few of the grain crop varieties for cultivation on irrigated lands are resistant against damage caused by blight or root rot; the cropping power of many regionalized varieties of peas, millet and buckwheat is low.

The logistical base for plant breeding and seed production requires strengthening and improvements and work is being carried out in this regard. The concentration of this work at large scientific-research institutes will make it possible, on a rapid basis, to create a modern logistical base for studies, to solve completely the tasks confronting the plant breeders and to raise the level and effectiveness of studies on genetics, immunity, physiology, biochemistry and other branches of biology, which serve as the theoretical base for solving the practical problems of plant breeding. Measures are being carried out in connection with the construction of plant breeding centers, equipping them with instruments and laboratory equipment and training and improving the skills of the scientific personnel.

In the interest of implementing considerable improvements in seed production and gradually converting it over to an industrial basis, the production of seed for grain crops is being concentrated at specialized seed production farms in the union and autonomous republics, krays and oblasts. Well organized seed production operations is a most important factor for achieving growth in cropping power and in the gross yields of grain. During the Eleventh Five-Year Plan, the overall increase in growing areas for grain crops, using new and more productive varieties that have been regionalized since 1976, will amount to approximately 38 million hectares.

The growth in grain production called for in the Eleventh Five-Year Plan requires a considerable increase in mineral fertilizer applications in behalf of the grain crops. It has been established that mineral fertilizers ensure approximately one half of the increase in the gross yield of grain.

As yet, the quantities of mineral fertilizer being supplied to agriculture preclude the possibility of sowing all of the grain crops on fertilized fields. Thus, in 1980, 77 percent of the grain crop plantings in the Kazakh SSR were not supplied with mineral fertilizers. Very little fertilizer is being applied in behalf of the grain crops in the eastern regions, where the principal production of commodity grain is concentrated. In the Kazakh SSR, 9 kilograms of nutrients were applied per hectare of grain crop planting in 1980, in western Siberia -- 17, in the Volga region -- 21 and in the Urals -- 28 kilograms of nutrients.

In 1985, the plans call for agriculture to be supplied with no less than 115 million tons of mineral fertilizers in conventional units. The allocation of no less than 60 percent of the increase in fertilizer deliveries, for use with the grain crops, will make it possible to apply 50 million tons of mineral fertilizers in behalf of these crops. The plans call for the principal increase in fertilizer deliveries to be sent to the large grain producing regions of the country.

Under conditions involving a deficit of mineral fertilizers, special importance is attached to introducing into operations more rational methods for their application. In particular, the yield obtained from local applications of fertilizer is 2-2.5 quintals per hectare higher than that obtained from widespread applications. In this regard, considerably greater volumes of work will be carried out during the Eleventh Five-Year Plan in connection with applying phosphorus fertilizers to the drill rows during sowing and root applications of nitrogen fertilizers to the soil when applying top dressings to the winter crops. The production of special equipment is being organized.

For the purpose of intensifying the effectiveness of use of mineral fertilizers and raising the fertility of the soil in the Nonchernozem zone and the Far East, work will be carried out in connection with the liming of acid soils. More extensve use must be made of one particularly effective method for raising soil fertility -- phsophorite fertilization. The rates for the liming of acid soil are very low, owing to the limited supplies of chemical ameliorants being made available to agriculture; considerable improvements must be realized in the quality of these ameliorants.

By 1985, the area of annual liming should ideally be raised to 10 million hectares. This will require an increase of up to 100 million tons in the deliveries of liming materials to the kolkhozes and sovkhozes. The utilization of the potential of deposits of phosphorite meal will make it possible to increase its production by a factor of 2-3 and ensure its use in 1985 in a volume of 8-10 million tons.

In addition to mineral fertilizers, more extensive use will also be made of organic fertilizers. In 1980, 280 million tons of such fertilizer will be applied in behalf of grain crops. By 1985, assuming an overall use in farming of up to 1-1.2 billion tons of organic fertilizers, up to 350 million tons will be used for grain crops.

Under modern conditions with regard to the intensification of agricultural production, an indispensable component of the technology for cultivating grain crops is that of protecting the plants. An analysis of its economic effectiveness reveals that measures aimed at combating pests, diseases and weeds serve to protect considerable quantities of agricultural products. At the same time, the use of herbicides and dessicants reduces labor expenditures required for carrying out weed control work and harvesting the agricultural crops and it also lowers production costs for the production of goods.

The extensive use of mineral fertilizers, land reclamation work and production specialization and concentration require more extensive use of pesticides. In this regard, the volumes of chemical work associated with protecting the grain crops will increase considerably during the Eleventh Five-Year Plan. When pesticides are employed, the scientifically approved regulations governing their use, approved by the USSR Ministry of Public Health and the USSR Ministry of Agriculture, must be observed in a very strict manner.

During the past few years, the culture of farming has improved at kolkhozes and sovkhozes throughout the country. However, the weediness of the grain crop plantings on many farms is just as high as it has been in the past. According to the data obtained from many computations carried out both in our country and abroad, weeds cause a shortfall of from 10 to 15 percent in the grain crop yield. Thus the complete destruction of weeds should be viewed as one of the most important tasks of modern farming, with the solution of this problem being dependent upon the all-round use of mutually associated organizational, agrotechnical and chemical measures.

The importance of agricultural aviation increases in connection with carrying out the measures planned for protecting the grain crops against pests, diseases and weeds. In 1980, the aviation method was amployed for treating 56.5 million hectares of plantings, or 35 percent of the overall volume of plant protection work. During the Eleventh Five-Year Plan, the volumes of aviation-chemical work to be carried out on the kolkhozes and sovkhozes will increase considerably.

The further development of grain production, improvements in its stability and effectiveness, the introduction of new technologies and the carrying out of field work during the required agrotechnical periods are inseparably aligned with improving the technical equipment status and with growth in the level of branch mechanization. A large amount of grain is being lost at the present time owing to the untimely harvesting of the crop. The average workload for a grain harvesting combine throughout the country is approximately 180 hectares and in Kazakhstan, the Volga region and Siberia -- up to 200-220 hectares. As a rule, the harvesting of the grain crops lasts for 20-25 days instead of the 10-12 days as called for in the agrotechnical schedules. Nor is the sowing, soil preparation and other agricultural operations being carried out in conformity with the optimum periods for conducting such work.

The grain harvesting combines being supplied to agriculture are still not distinguished by high quality manufacture or by fine technical or technological operational reliability, their output is low when thrashing highly productive varieties of grain crops and they are not hermetically sealed to an adequate degree, as a result of which large quantities of grain are lost during thrashing.

During the 26th CPSU Congress, serious attention was focused on those problems concerned with the production and delivery of reliable equipment to agriculture during the Eleventh Five-Year Plan. Compared to the previous five-year period, the deliveries of grain and multiple purpose sowing machines will increase by 24 percent and grain harvesting combines -- by 9 percent. Increases will take place in the deliveries of windrow harvesters, corn harvesting combines and other items of equipment.

The machine builders must ensure the production of highly productive combines having a capability of up to 10-12 kilograms per second; they must raise the technical reliability of this equipment during operations; they must organize the production of combines having a high cross country capability and productivity for the nonchernozem zone of the country, self-propelled harvesters, multiple-unit soil cultivation machines and assemblies and multiple-purpose sowing machine loaders.

During the years of the Eleventh Five-Year Plan, a considerable increase will take place in the deliveries of grain cleaning and drying equipment to agriculture and, as well, the number of granaries will increase. This will make it possible to raise the quality of the grain and reduce its losses during processing and storage.

The decisions handed down during the 26th CPSU Congress, directed towards the further intensification of agriculture, are opening up new and great opportunities for increasing the production of grain and other crop husbandry products. The agricultural workers are doing everything possible in the interest of achieving their planned goals.

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